

### AMENDMENTS TO THE CLAIMS

1. **(Currently Amended):** A method for preparing a hydrogen generation reactor chamber to reduce coking, the method comprising:

applying a cold spray of (a) an alkaline oxide mixed with metal or (b) oxides doped with alkali metal or alkaline earth metals compounds, mixed with metal, to at least one surface within the chamber.

2. **(Currently Amended):** The method of claim 1 wherein the metal is selected ~~from~~ from the group consisting of noble metals and ~~alkaline~~ transition metals.

3. **(Original):** The method of claim 1 wherein the percentage of metal to alkaline oxide in the cold spray is about 50% to about 90%, respectively.

4. **(Original):** The method of claim 1 wherein said hydrogen generation reactor chamber is comprised of at least one of aluminum, stainless steel, titanium and high temperature refractory alloys suitable for hydrogen generation.

5. **(Original):** The method of claim 1 wherein said hydrogen generation reactor chamber is further comprised of at least one port having a tube.

6. **(Currently Amended):** The method of claim 5 further comprising a step of applying a cold spray of an alkaline oxide mixed with metal or oxides doped with alkali metal, or alkaline earth metals compounds, mixed with metal to a surface of said tube, said application to said tube occurring either during said application of said cold spray to principal surfaces within the chamber or during a separate applying step.

7. **(Original):** The method of claim 6 wherein said applying step is directed to at least an inner surface of said tube.

8. **(Original):** The method of claim 6 wherein said applying step is directed to at least an outer surface of said tube.

9. **(Original):** The method of claim 6 wherein said tube protrudes into said hydrogen generation reactor chamber.

10. **(Canceled).**

11. **(Original):** The method of claim 1 wherein said hydrogen generation reactor chamber has a cover, said cover having applied thereto a cold spray of an alkaline oxide mixed with small quantity of metal.

12. **(Original):** The method of claim 11 wherein said cover also has a hydrogen separation membrane incorporated therein.

13. **(Canceled).**

14. **(Canceled).**

15. **(Original):** The method of claim 1, wherein said cold spray is applied to leave portions of said hydrogen generation reactor chamber uncoated for joining operations.

16. **(Previously Presented):** The method of claim 15, wherein said joining operations comprise at least one of welding, brazing or diffusion bonding.

17. **(Original):** The method of claim 1, further comprising applying said cold spray to any protrusion into said hydrogen generation reactor chamber.

18. **(Original):** The method of claim 17, wherein said protrusions is at least one of tubings, thermowells and wells for sensor probes.

19. **(Canceled).**

20. **(Canceled).**

21. **(Original):** The method of claim 1 wherein said hydrogen generation reactor chamber is tubular.

**22. (Original):** The method of claim 21 wherein said tubular hydrogen generation reactor chamber has covers or end-caps that contain one or more tubes.

**23. (Currently Amended):** A method of fabricating a low temperature hydrogen generation reactor chamber for reduced carbon accumulation, the method comprising:

applying a cold spray of ~~a mixture of~~ (a) alkali metal and an alkaline oxide mixed with metal or (b) oxides doped with alkali or alkaline earth compounds, mixed with metal to at least one surface within the chamber.

**24. (Currently Amended):** A method of preparing a hydrogen generation reactor chamber to reduce carbon formation on an inner surface of the hydrogen generation reactor chamber, the method comprising:

applying a cold spray of (a) an alkaline oxide mixed with metal or (b) oxides doped with alkali metal or alkaline earth metal compounds, and mixed with metal, to the inner surface of the hydrogen generation reactor chamber.

**25. (Currently Amended):** A method of preparing a low temperature hydrogen generation reactor chamber to reduce carbon formation on an inner surface of the hydrogen generation reactor chamber, the method comprising:

spraying a gas-fill mixture, comprising ~~a metal and~~ (a) an alkaline oxide mixed with metal or (b) oxides doped with alkali metal or alkaline earth compounds, mixed with metal, to the inner surface of the hydrogen generation reactor chamber.